The RARS EXCITER

RALEIGH AMATEUR RADIO SOCIETY
WORLDWIDE FRIENDSHIP

Issue 229 April, 1989 Repeater: W4DW/R 146.04/64 Mhz

RARS TO RUN 2 FIELD DAY SITES!

Great news! A second Field Day organizing effort has blossomed and this may be the main event. Chris Shackleford KC4GRV, with Ed WA4PEN, Rick WA4LYN, Dave AB4LR and others, will stage a (more social) Field Day affair on a tract of Chris' land on the Granville-Wake County border. That's 18 miles up Creedmoor Road (Highway 50), about 5 miles north of Falls Lake. There is a 3 acre open space (trees on three sides) and a 2-1/2 acre pond (swimming and fishing). Several Granville County hams will help out; Ron AA4VK will captain the "on-the-air" part. Courtesy of the Creedmoor Volunteer Fire Department there will be a 15 Kw generator with a 3 Kw backup. Also there will be a 16'x32' tent, six 8-ft tables, 2 area lights (175 watt mercury vapour mounted on poles), and electrical hookups for RV-type vehicles. Electrical drops will be courtesy of Chris and fellow National Guard buddies. A "water buffalo" (500 gallon potable water tanker) is in the works. Arrangements are being made for portable toilettes.

This is a come one-come all event. A nice setting for the family! In an upcoming Exciter Chris will publish a layout map to give people an idea about the site.

Chris (tel. 781-7033 evenings except Tuesday) would like to hear from people who would like to help out. (Think of how much they have done already.)

For safe swimming there will be a need for (childern) watchers. And on the subject of safety, is there someone with safety/security experience who would come out to the site ahead of time to do a safety inspection and perhaps head a safety committe for all our benefit? Would someone like to take the responsibility of periodically checking the generator for "normal" operation (fuel, oil, and within-tolerance voltage)? Just like a hamfest, we need a talk-in station. Food coordination will be important.

Chris welcomes RVs, "pop-ups", vans, etc. If you will need an electrical hookup, you MUST place a reservation with him ahead of time. Why? Because he wants to be able to have a hookup installed and ready for you.

One of the goals of this Field Day event is to get as many operators on the air as possible. I heard 50 as a target; someone else thinks they can get as many as 100 to get their feet wet? Sound like fun for a spurt of operating/logging time?

Across town (so-to-speak), some of the "blood-and-guts" guys got together at Umstead Park on March 11th (great weather). We made some mapping measurements to get a perspective on station sites and antenna support spans.

Now we have two RARS Field Day efforts: traditional-style (QTH of KC4GRV) and contest-style (the meadow next to the Maple Hill Lodge in Umstad State Park). Feel free to join in where you feel most comfortable. Both groups have several nice Extra Class call-

Continued on Page 13

Editor: Vince Yakamavich, AA4MY - 220 Carriage Tr., Raleigh, NC 27614 847-8512

Minutes of the Meeting

The regular monthly meeting of the Raleigh Amateur Radio Society was held March 1, 1989 at Ballentine's Cafeteria in Cameron Village. This was the 9th Annual Awards Banquet. The festivities were attended by 84 members and guests. After a fine buffet dinner, the awards were given.

Edward Breeden, N4SSU, presented a plaque to Cablevision of Raleigh for thier cooperation in the use of their tower for the 04/64 repeater. Edward Colquhoun acceped the award for Cablevision.

President Pete Thacher, N4HQZ, presented certificates to the following members for their club activities:

Anita, KC4AQB, for her efforts with last year's picnic and hospitality party.

Walter, AB4DQ, for his Special Events Activities.

Edward, N4SSU, for his efforts with Public Service.

Jim, N4BYO, for his accomplishments as Training Director.

Audrey, WB4ZSM, for her many years as Publicity Chairperson.

64 on 64 Certificates were presented to Pete, N4UOE, and to Andy, N4SSX.

Ron, WA4MJF, presented a Worked All Reams Award to Anthony, WD2AJJ.

Ed, WA4PEN, presented a certificate from the UHF/VHF SIG to Sherry, KB4EXL, for her fine hospitality for the SIG's meetings.

After the awards, a few prizes were given. Fran, N4SDQ, won the MJF 100W amplifier. Lyman, KB4LEN, won a $25 gift certificate to Crabtree Valley Mall.

The entertainment for the evening was provided by Greg Dixon on piano, and Debbie Bennet with vocals. A fine evening was had by all.

Sue Meyer Parks, WB4USX
RARS Secretary

WELCOME NEW MEMBERS!

RARS extends a hearty "WELCOME" this month to 5 new members!

Ray Blackwell, K4HJJ, of Raleigh
Patricia Coates, KC4HYI, of Durham
Ann Foltz (no call, yet!), of Raleigh
Glynn Furr, K4RKI, of Cary
Paul Stroud, AA4XX, of Raleigh

It's good to see KC4HYI amongst the members: Patricia graduated N4BYO's Fall '88 Class w/ a Novice, and she upgraded to Tech at our December exam session.

Ann Foltz is enrolled in N4BYO's current session, along with OM John (already a RARS member). It won't be long now — and another YL/OM team will be gracing our air-waves!!

We understand K4RKI joined as a result of attending one of RARS' VHF/UHF SIG meetings! Glynn is not the first to be introduced to the club in this manner — WA4MJF et. al. are doing a real fine job promoting the fellowship we share within RARS!

AA4XX has been around in Raleigh for a while — and sometimes heard on '64. Glad to have you in the ranks, Paul! (Love that call!! Ed.)

Ray Blackwell, K4HJJ, ... well ... sometimes we editor's don't know even a small bit about a new member! Welcome, Ray. We ***all*** look forward to meeting you and learning more about K4HJJ!

As ever, we hope you new members will choose to become active in our fine organization. With now 296 members on the roster, there are a multitude of friendships to be made and savored. The best way to become acquainted with the character of the club (or is it the "club characters"?!?) is to come up on 146.04/64 or 28.364, and join in on one of the RARS nets!

73, and again, *WELCOME!*

CLASS UPDATE

The Ken Lisenbe Memorial Training Class, being held at the McKimmon Center at NCSU is off and running. In fact, by the time you read this, it will be over! Thirty three students have registered, and just about all will be receiving their licenses shortly.

As ever, RARS Members Jim (N4BYO), Chet (KB4LAF), and Ed (WA4PEN) did a fantastic job in putting the course together, and with the help of other RARS members serving as "Specialty Instructors," the course was well received.

We congratulate the students, and as you enter the ranks of Amateur Radio, we at RARS would like to extend a hearty "WELCOME!" to you.

Johnny Barbour
Elizabeth Barham
Kenneth Barnhouse
Stephen Blackwelder
Bob Caraway
Eddie Clark
Susan Clark
Gilford "King" Colbert
Edmund Conen III
William Davison
Phillip Dean
William Ellis
Ann Foltz
John Foltz
Carl Fonicello
David Gingell
Michael Gingell
Mary Golas
William Hale
Virgil Hinds
Harry Huddleston
Louis Huddleston
Sam Johnson
Robert Kratz
Robert Kuntz
Larry Myers
Chuck Payne
Bob Rinn
Annette Rogers
Hugh Stahl
Paula Thompson
Lisa Walker
Mike Welsh
Chester White
Ken White
Rick Yost

RARS HAMFEST!!

SUNDAY, APRIL 16TH!

20 Meter Band Fire: Still a Mystery

This week marks the eighth anniversary of the freak fire that destroyed over 50 kilohertz of the 20 meter band, and forced the FCC to shut down most HF ham bands for over 24 hours. Apparently the fire originated on or about 14.280 MHz following an unusually long series of QSOs by an undetermined number of California stations running very high power and extreme voice compression. At the time, Marvin Larpsnogg, an FCC Special Frequency Engineer, told reporters: ".. we had a hell of a time putting the fire out. Shutting down the propagation generators did no good at all. The fire just spread up and down the band, so we had to turn off all the HF ham bands from 40 through 10 meters to smother the flames."

Finally, after three hours, the FCC had the fire under control. Most HF bands were back in operation by the next day. However, 20 meters was closed for more than eight weeks while the charred frequencies were being refurbished. Since that time, many studies have been made by Dr. P.P. Peritonitis, Chairman of the Consultave Committee on Frequency Damage, indicating that the cause might have been due to thermo-frequency heating (TFH). However, the results of the study have been inconclusive. Some weeks after the fire the FCC promised to install a sprinkler system on the band to prevent another disaster. With the advent of deregulation, however, the sprinkler system was never installed, and 20 meters still has no protection. The League of Radio Relaying for the Americas (LRRA) has expressed concern about this neglect of 20 meters, and calls attention to the fact that the 5 meter ham band was completely wiped out for all time by the holocaust of ozone created with the spark gap transmitters of the 1930's. Unfortunately, the FCC no longer has the funds to make good on its promise to protect 20 meters.

For that reason, all hams should use extreme care when using 20 meters and all other bands. They are a perishable resource. Don't use high power on ANY ham band, or use any mode that might ignite a frequency into flames — particularly late at night when the frequencies are especially dry. Remember — only YOU can prevent frequency fires!

ARNS

APRIL BIRTHDAYS!!

Apr 14 Mike Grissom, WB8MRA
Apr 14 Mary Beth Demcko, KC4CPK
Apr 14 Mark Burnette, WB4WIN
Apr 14 Joseph Homevec, WA4ENZ
Apr 15 Tom Swanson, N4IZE
Apr 16 John Thomas, KK4JB
Apr 19 Kirk Ellis, KK4YP
Apr 24 Robert Teague, K4HKQ
Apr 26 Anthony Palestino, WD2AJJ
Apr 26 John Fish, N4SHX
Apr 28 Charles McDaniel, KC4CRT

HAPPY BIRTHDAY TO ALL!!!

CANADA TO ABOLISH CW SUB-BANDS??

"A notice in the February 18th Canada Gazette (their version of our Federal Register) proposes to completely DO AWAY WITH ALL SUBBAND ALLOCATIONS in their amateur service. What will determine the emissions authorized in the various ham bands will be solely a maximum bandwidth."

On 160 through 10 meters, the maximum bandwidth allowed would be 6 KHz. On 6 and 2 meters, 30 KHz bandwidth; 220 MHz: 100 KHz bandwidth; 430 MHz and above: 6 MHz bandwidth.

If passed, digital / telegraphy subbands would no longer exist in Canada.

Comments (from Canadians) close in mid-April.

Tnx, W5YI, 3/1/89

(Editors Note: I wish this WAS an April Fool's joke.... talk about chaos on the bands!)

April Program:

Harry Greenberg, W2AC, will present a program on antennas from a practical point of view. This should be a most informative meeting! See you there.

Raleigh Ten-Ten Net Active Again

Thanks to the efforts of RARS member Paul Sims, WB4YBF, the "Sir Walter Raleigh 10-10 Net" is alive and well, & looking for more participation.

Years ago, a group of Raleigh hams had a club chartered with 10-10 International, and operated the net to promote fellowship on the ham-bands, particularly on 10 meters. The net provided participants the opportunity to work other 10-10 members, and exchange their "numbers," in pursuit of awards & certificates offered by 10-10 International.

I guess when 10 meters all but shut down a while back, the activity of the Raleigh group slowed to near death. But now that 10 is hopping, WB4YBF and several other RARS members have put forth the effort and are breathing new life into the "Sir Walter Raleigh 10-10 Net."

The net meets each TUESDAY evening, at 7:00 PM, on 28.364 Mhz. Check-ins from all over are welcome, and it's a good place to pick up some needed contacts for 10-10 awards, or your WAS 10 meters, or what-ever. The other night had a fair contingent of RARS members, as well Wyoming, Arizona, and Califiornia well represented! No telling who you'll find there.

To join 10-10 International, and get your own "number" (and there are over 50,000 10-10ers out there!!) you'll have to work 10 current members, get their names, QTHs and 10-10 numbers (all on 10 meters, of course), and then apply for membership.

For more information on 10-10 International, mail off one green-stamp ($1) to Chuck Imsande, W6YLJ, 18130 Bromley St., Tarzana, CA 91356-1701. Enclose an address label if you have one. Ask for the 10-10 International Information Package and Application Form.

Even if you're not interested in becoming a 10-10er, WB4YBF's net is still alot of fun. Hope to hear you there Tuesday evenings!

73, AA4MY

Estate of W4MMD

As reported in last month's EXCITER, the club is assisting in the sale of the estate of W4MMD. Some fine gear can be had at minimal cost - and you'll be supporting the club & the Goldwater Scholarship fund, too!

Bidding Rules:

1. The major items of equipment would be offered to the club membership on a sealed bid, minimum bid basis first. Any equipment not sold would be placed on the Hamfest table.

2. The balance of the miscellaneous hamshack equipment would be placed on the Hamfest table.

3. Ten percent (10%) of the proceeds of all sales would be donatated to the Barry Goldwater ARRL Engineering Scholarship Fund.

4. Submit a written bid to RARS, PO Box 17124, Raleigh, NC 27619. The Box will be emptied on the Tuesday prior to the April 5th meeting. Or you may bring a bid with you to the meeting.

5. Bids will be opened at the April 5th meeting, and the highest bid over the minimum will own the equipment (subject to payment of course!)

6. Any equipment not awarded in April can be rebid at the April Meeting and any equipment not then sold will be placed on the Hamfest table.

	MIN BID
KENWOOD TS140-S w/ PS430 P/S & MC-40 Hand Mic	$850
Climbing Belt	$40
MFJ VERSATUNER MODEL 949C	$60
TENTEC 561 CORSAIR w/ PS & MIC	$1100
DRAKE TWINS (T4X & R4X) w/PS	$250
HENRY 2KW LINEAR w/ PS	$500
Heath HW101 Transceiver	$100
Heath 10-102 Oscilloscope	$50
Heath 80 M Transceiver	$30
Heath XG625 VTVM	$25
10-15-20M QUAD Antenna	$30

Most equipment has original boxes and manuals.

HOMEBREW SIG REPORT

The second Homebrew SIG meeting was held on March 15 at the home of N4SWC. Ed and Margaret were exceptional hosts. The meeting was postponed from the previous week due to the icy road conditions. In attendance were N4SWC, N4UOF (Al), KM4BU (Walter), KA7OXQ (Andrew), W2BBN (Bill) and KA5IEC (James).

Considerable discussion during the meeting was that a major need for homebrewing activities was information. Readily getting questions answered about techniques, locating parts and schematics are a few examples discussed. Possible solutions mentioned were a net on two or ten meters or a computer based bulletin board system. N4UOF volunteered to act as net control for a two meter homebrewing technical net.

The first meeting of the Technical Information Exchange Net was Saturday March 18 and had N4UOF as net control and the following stations checking in: KC4HWC, N4SSX, AB4EL, WA9NEW, N4UOE and WA4MJF. Thanks to the stations checking in on this debut of the net and we hope all RARS members will take advantage of this net. This net is for anyone desiring assistance on any technical aspect of amateur radio equipment setup and construction. Look for the net each Saturday evening at 8:30 p.m. following the RARS traffic net on the 146.04/.64 repeater.

The next meeting of the Homebrew SIG will be Wednesday April 12. The meeting place had not been determined as of the newsletter deadline. Please contact James Martin KA5IEC at 781-6592 or Al Johnson N4UOF at 460-1758 with any comments or questions you may have about the Homebrew SIG.

James Martin, KA5IEC

CARY FOX HUNT!

Saturday, April 1st @ 2:00 PM. Listen on the 147.15 for the announcement that the hunt is under-way! Tom McGee, K4ZAD, Brett, KK4MY, and Uzma, N4UNX will serve as foxes for the hunt. Hunt freq. is 146.52 MHz. (Ed. Note: I can't say much for Tom or Brett, but Uzma certainly qualifies as a fox -- the YL type!)

GROUNDING OF HAM - EQUIPMENT

by Rolf Andersson, K8SL

(Editors Note: As opposed to some "arm-chair experts" you may find on the ham bands, the author of this article, (RARS member Rolf Andersson, K8SL) is truly an authority in the field of power distribution, grounding, EMI, and RFI. Rolf holds a degree in Electrical Engineering, and has specialized in the field of EMI/RFI/grounding for the past 10 years. He supervises an FCC approved RFI test facility, and as THE "corporate guru" in interference, has traveled worldwide to analyze and resolve RFI/EMI/ESD/grounding issues for North Electric, ITT, & ALCATEL. A ham for 35+ years, we can ALL benefit from Rolf's expertise in this area.)

A good grounding system is a must for all ham stations. Grounding of a ham station (including equipment set-up and antenna towers) is extremely important for both safety and to minimize interference to consumer electronics (yours and your neighbors) such as TVs, stereo systems, telephone-systems etc.

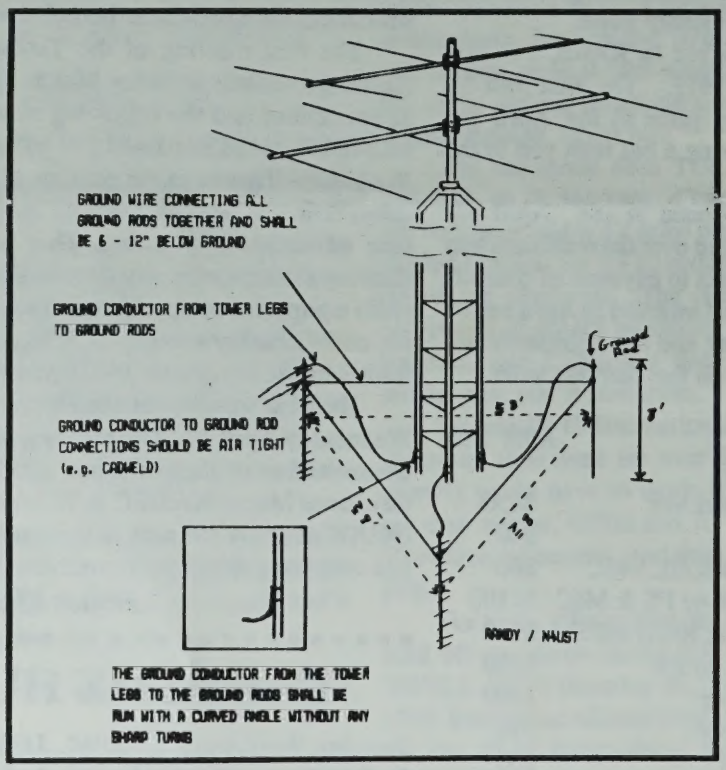
A station ground system is comprised basically in two parts:: grounding of the tower / antenna, and grounding of the operating position itself. Any tower can (and probably, at one time will) be hit by lightning and encounter electrical surges in the multi Kilo volt/ampere region. To protect your antenna system and your home from serious damage, your antenna needs to be adequately grounded.

It is equally important to ground the equipment at the operating position in order to minimize the possibility of electrical shocks, common mode noise loops (which will be explained later) and to provide a low-impedance path for stray RF to ground.

This article addresses grounding of the tower and antenna system; station grounding will be covered in a subsequent article.

GROUNDING OF TOWERS

The potential of a typical lightning strike increases from zero to hundreds of KVs or more in nano-seconds, and the current may easily be several hundred Kilo-Amperes. One of our local hams once noticed steam coming up from the ground surrounding the tower when lightning struck his tower. Because of precautions (good grounding), no current entered the house, and no damage was done.


GROUND WIRE CONNECTING ALL GROUND RODS TOGETHER AND SHALL BE 6 - 12" BELOW GROUND
GROUND CONDUCTOR FROM TOWER LEGS TO GROUND RODS
GROUND CONDUCTOR TO GROUND ROD CONNECTIONS SHOULD BE AIR TIGHT (e.g. CADWELD)
5'
8'
RANDY / NAUST
THE GROUND CONDUCTOR FROM THE TOWER LEGS TO THE GROUND RODS SHALL BE RUN WITH A CURVED ANGLE WITHOUT ANY SHARP TURNS

If lightning strikes an antenna tower directly or close enough to induce currents in the tower, the lightning energy has to be dissipated in the ground field and the current prevented from entering the house via the coax and/or rotor control cables.

Two major precautions should be taken to prevent disaster: a) provide a low impedance ground field and b) provide a means to disconnect the coax and control cables between the tower and the radio equipment when there is a risk of thunderstorms in the area.

Establishment of a low resistance ground field can be difficult at some locations because of earth resistiv-

ity. A ground field impedance of 25 ohms or less is normally considered to be sufficient for areas with an average number of thunderstorms. However, the actual impedance of the ground field is only known if a ground impedance measurement is performed.

For a typical triangular tower, a ground rod should be attached at each corner. 6' or 8' rods may be used but driving a longer rod deeper into the earth will decrease the ground field resistance. A 6' rod typically gives 35 - 40 ohms and an 8' rod approximately 25 - 30 ohms. Contrary to what one might think, increasing the rod diameter has a negligible impact on resistance. For example: increasing the diameter from 5/8" to 1 1/4" only lowers the resistance about 10%. For that reason, the rod diameter is increased only if the rod has to be driven into very hard ground.

Three well-spaced rods driven into the earth will provide three parallel paths. The total resistance is, however, not one-third that of one rod, but closer to 60%.

In order to obtain the 60% reduction, the rods must be spaced apart further than their length!! If the rods are spaced just 2 - 4 feet apart, most of the gain from using multiple-rods will be lost!

The conductors between the tower legs and the ground rods must be designed for lowest possible impedance. 10 Feet of a heavy conductor such as #6 wire has a self inductance of approximately 5 uH and can be used to bond the tower legs and ground rods together.

However, a lightning strike with a moderate surge of 2000 peak amperes and a rise time of 1 us through 10' of #6 wire will, despite the low inductance, develop 10 KV across the wire! At the tower, heavy clamps should be used for bonding the ground wires to the tower legs. At the ground rods, it is necessary to use an air tight bond which will not deteriorate because of moisture, acid in the soil, etc. Any exothermic welded connection will provide a reliable ground rod connection. A product called "CAD-WELD" is available from commercial antenna suppliers that will accomplish this welding task.

Some other notes for an effective ground system: The ground rods should also be tied together with a "ring connection" as shown in Figure 1. Never make any sharp turns routing the ground conductors from the tower to the ground rods. A fast high current lightning spike does not like to take sharp turns, and will exit your neatly formed ground wire at the turn! A ground conductor should never be routed through the concrete foundation of a tower. The lightning current may crack or even pulverize the concrete, possibly resulting in the tower's collapse.

There are several other precautions which should be added to a tower installation design. For example: the rotor should be bypassed with a heavy braid in order to prevent all of the lightning current from passing through the rotor; the guy-wires should be grounded at the anchor points — also using 6' or 8' ground rods.

Keep in mind the devastating power of a single lightning bolt. It can totally destroy all of your ham equipment in a nano-second — and possibly destroy your home, too. If your antenna system is above the tree line, IT is the primary target for a hit. Don't take shortcuts on proper grounding technique!

HOW FAST IS FAST??

The latest technological breakthrough at AT&T Bell Laboratories involves a bipolar transistor that can switch off and on 140 billion times per second. That outdoes the silicon bipolar transistors used in current supercomputers by 12 times.

The new transistor is made of indium phosphide and gallium indium arsenide, rather than silicon. Electrons travel across the device at half of a trillionth of a second or five times faster than electrons in silicon bipolar transistors.

This blinding speed is possible because the electrons move quasi-ballistically - meaning the electrons collide with only one or two atoms in the semiconductor crystal as opposed to the multiple collisions in silicon transistors. Collisions slow electrons down.

The new transistor's test speed is only the tip of the iceberg When a silicon transistor operates at 30 GHz, it uses up to 75% of its capacity. The indium phosphide transistor, even when operating at 140 GHz, uses less than 50% of its capacity.

Telephony, December 26, 1988
via KK4JB

LEADING EDGE

Sherman Starnes, W4TZU

Last month's description of the earliest attempts at communication by reflecting a radio signal off the moon spanned about 7 years. For all those efforts, no amateur two way contact had resulted. In the seven years following the first two meter echos heard by W3GKP and W4AO in 1953, several hams duplicated the feat. Among these were W2NLY, W6QKI and W1FZJ. This was in the days when a "1" call meant that the station was in New England, so you can see where the efforts were concentrated. When the first two way moonbounce QSO was made, one end of the circuit was represented by a group that had been trying for over four years. At the other end of the QSO, the effort had been under way for little more than a year.

You have to go to the September, 1960 issue of QST to get the whole story, but the opening remarks in the two articles written by hams at each end of the contact give one the flavor of the moment.

From California, Bill Orr, W6SAI, wrote, "Now, in the cool, silver light of the waning moon, the parabolic antenna looms above the clustered amateurs. It is 0145 Pacific Daylight Time, July 17, 1960, and the participants in the forthcoming drama are not quite awake and only dimly thinking of the historic event soon to happen." In Massachusetts, Sam Harris, W1FZJ, started his description with, "Moonbounce. The elusive goal of the Rhododendron Swamp VHF Society for five years." Just like the contact, the two descriptions mesh and produce a bit of the feel of being there.

W1FZJ had truly dreamed of achieving that goal. He and the other members of the RSVHFS (otherwise known as W1BU) heard echos of their signals on six meters four years before. A year after that, they were listening to echos from their 128 element array on two meters. Sam's comments describe the results of those years of trying - "... weak and willowy ... weak and fading ... sporadic ... marginal." Sam worked for Microwave Associates, a front runner in the microwave field. They built something called a "parametric amplifier", the lowest noise amplification device known at that time and that was the device that lead the group to migrate to 1296 MHz. Bonuses included the lowest sky temperature (galactic and solar noise) for a ham band and the highest frequency ham band where a KW input was possible, (the legal limit then). A big plus was that the hams at Eitel-McCullough (EIMAC) had become interested in 1296 moonbounce. That's where the KW input amplifier came from, and the hams at EIMAC were competent and reliable.

The hams at EIMAC had become interested in moonbounce at the dedication of their new plant in San Carlos, CA, in April of 1959. Their new plant was opened by a radio signal sent from College, Alaska, via the moon, to San Carlos on 440 MHz., using 10 KW feeding a 60 foot dish. Hank Brown, W6HB, instantly decided that the feat could be accomplished on a ham band.

There was a lot of back scratching involved in the early two-way moonbounce experiments. Walt Morrison, W2CXY, of the RSVHFS contacted W6HB to inform him of the East Coast efforts and ended up with one of the two EIMAC klystrons sent to New England. Sam Harris, W1FZJ got the other. In return, Sam sent a Microwave Associates parametric amplifier to the "EIMAC gang". That provided a boost in the already high level of interest at EIMAC. Suddenly, they found themselves wondering where the parabolic dish was coming from, and how they could generate a signal that would stay in the 100 Hz passband at W1BU. In New England, they wondered how they were going to mount the 18 foot dish, and how they were going to track the moon with it. No one at either end wondered how they were going to switch from receive to transmit. The feed line was a coax as big as your wrist, and rather than connectors, it was bolted to whatever it was connected to. They switched from receive to transmit by unbolting the big coax from the parametric amplifier and bolting it to the klystron.

Slowly the wondering changed to knowing. But on July 17, the hams in Bill Orr's "cool, silver light" and those in Sam Harris' Rhododendron Swamp VHF Society were not to taste the thrill of success. Each group heard some echos of the other but the verification had to be

made on a coast-to-coast telephone line. The dish at EIMAC was only an 8 footer, and rusty. Their signals heard at W1BU were in and out of the noise. The two-way contact was not made until four days later on July 21, 1960. The major improvement was made at EIMAC. They went to the supermarket and got some aluminum foil and lined the rusty dish with it.

After being so close on the 17th, the two-way must have been anti-climatic but Bill Orr went back to the January 1922 issue of QST to find a parallel. It was the record of the first transatlantic contact, and although it was thirty eight years old, it was certainly appropriate: "Oh, Mr. Editor, how many exclamation points have you got? Trot 'em out, as we're going to need them badly, because WE GOT ACROSS!!!!"

Public Service Watch

Many of you have been asking about our participation during the upcoming March of Dimes Walk-a-Thon on April 22th. This year's walk will be in the Research Triangle Park and will get underway at 10 am. The March of Dimes officials have asked for our help in providing public service communications along the route. They have also asked that we set up communications from 7 AM till 5 PM on the 22nd.

Therefore, I propose that we establish two teams of 6 Hams to operate from 7am till noon and noon to 5 PM. I think we should also stagger the break at noon so that we can provide continuity.

Please let me know if you can help with this project: we'll need a minimum of 12 operators. Also remember that you'll need spare battery power for the duration and probably more than a HT rubber duck antenna. Call me or see me at the April RARS meeting.

'73s Edward - N4SSU

Pat-a-cake, pat-a-cake, amateur man,
Tune up your rig as fast as you can;
Pick up your mic, or maybe your key,
Listen for DX -- Q preceeded by C.

de ARNS

Triangle East Amateur Radio Association

The Triangle East Amateur Radio Association (TEARA) is a new club, chartered January 10, 1989. The club is open to all amateur radio operators and any interested persons.

TEARA was founded to fill a void that has existed in the area, and not to compete with any other area clubs. The club is a technically oriented club and will strive to educate and encourage its members to improve their amateur radio technical skills as well as upgrade.

TEARA is an ARRL Affiliated club, and encourages its members to join and support the League. Founding members held a Novice license class last fall, and a Novice / Technician / General class is scheduled to be held beginning April 20, 1989 at the Smithfield Public Library.

The club has many activities scheduled for 1989 in addition to the classes: An ARRL Approved Hamfest will be held in Selma October 7, 1989 from 8:30 AM to 3:30 PM, at the Selma Moose Lodge (at I-95 & US 70-A). The proceeds from this will be used to finance a 2 meter repeater for the Smithfield area, along with other club projects.

A program on Satellite communications was held at the February meeting. Future programs in the next few months will be on speech synthesis, a clinic (check-up) for your 2-meter rig, and Emergency Communications.

TEARA meets monthly at the Golden Corral Steakhouse in Smithfield. The club meets the third Tuesday of each month. The formal business meeting starts at 7:30 PM, followed by the program; however, if you plan to eat, you may wish to arrive around 7:00 PM. All area hams and interested persons are cordially invited to attend, and join TEARA if they so desire.

If you would like more information on TEARA, contact Andy Singer, WK2F (RARS Member & PCTN Net Control on Monday nights), @ 934-7979 (evenings). You may also contact Kirk Ellis, KK4YP (RARS member, monitors 146.88 evenings) at 965-9577. Information may also be obtained via the club net which meets Sunday thru Thursday nights at 7:30 PM on the 145.270 repeater.

Kirk Ellis, KK4YP

K2VJ Port I-2

By Vince Luciani, k2vj

(Here is the first of a 3-part series on K2VJ's Italian Odyssey, as the author at times refers to it; a two month rambling tour of Italy based from the QTH of his friend near Milan, Dr. Giorgio Beretta, I2VXJ, an international figure in amateur radio contesting. The majority of this accounting is, of course, on ham radio. Yet, Italy without its exclusively special food, cheeses, wine, women, and art might well be ... ?? See what you think.)

It was 9 AM local time - seven hours ahead of EST, two hours ahead of UTC, and eight hours after departure from New York — when our big TWA bird touched down on the approach runway at Milan International Airport in Italy. There to greet me after the inevitable but thankfully brief customs ritual was my friend Dr. Giorgio Beretta, better known as I2VXJ.

Although New York in October was sunny, Milan offered rain and fog, which is how it was doomed to remain in most of northern Italy throughout my entire two-month stay. Sunny Italy, indeed. Fortunately, there were various compensations in store such that weather mattered not so much.

This one time (for me) odessy was to be a splendid combination of objectives. First to return in kind a previous trip by I2VXJ to my former home QTH is southern New Jersey; plus, there were many relatives to visit, all vaguely known, none I had ever heard from or ever seen; too, there was the inherent need for a "roots" trek to the small mountaintop birthplace of my parents.

Naturally, I also wanted to tour Italy's famous cities and attractions of which I'd heard so much, including Rome for a visit with the Pope. Unfortunately, the day I had reserved for the Pope, my cousin talked me into climbing the narrow, winding, unending sets of cramped stairways leading to the top of St. Peter's dome. Exhaustion from the climb precluded my later entertaining guests. Perhaps next time, John Paul.

Lastly, my friends back home were entitled to a reliable report on the factuality of all those delicious Italian dishes, cheeses and wines - vino. Oh yes. There was also a mild curiosity over how today's Italian woman compared to what I remembered from my past. (I'd been there once before while a Radio Officer in the Merchant Marine.)

What hadn't been factored into the program, however, was ham radio. In fact, Radioamatori Incident Numero Uno took place on my first weekend via a trip with Giorgio to the city of Bologna, about 120 miles distant, to attend an annual gathering of Italy's top DXers. The site was the Marconi Museum which was undergoing extensive renovations, hence none of the exhibits were in view.

My dismal lack of competence at speaking Italian presented an enormous barrier that would repeatedly limit enjoyment of Italian life by precluding participation in conversations except for brief comments via incomplete sentences. Yet hams are hams everywhere — particularly DXers — which means it wasn't all that difficult to get the drift of things under discussion at the time, and of how feelings ran. Rather warm ... sometimes not. But then, is there anywhere a fully contented DXer??

It pleases me more to recall the 7-course meal that followed the meeting. Vino with every course including a fabulous dessert I couldn't handle then but devoutly wish I had a second chance at, now.

Giorgio lives about 30 miles southeast of Milan, in the pancake-flat Po Valley farm country. His is a ham's house, first and foremost. The living room into which one steps from the front door is a ham radio studio. Everything in it except a dresser is ham radio, the long side of the room being a huge operating console.

Cables are run neatly everywhere, no need to disguise them. Wood in Italy is a scarce commodity, which means homes and buildings are combinations of stone, marble, concrete or brick — even the telephone poles are concrete!. (I found it to be a new but unappealing experience to encounter man-made forests with thousands of planted trees growing neatly in rows.)

Electric cables in Italian houses therefore do not pass through joists and studs, hidden from view by wall paneling. Instead, wiring in Giorgio's place uses cables (which look like lamp cord) stapled to the concrete wall, the only place they could be. Wall paint, generously applied, makes the cords / cables less apparent. No problem.

Outside, the grounds were covered with towers which supported separate 6 element mono-band beams on 10, 15, and 20, plus a 3 element yagi for 40. A seven element TH7DXX was on a separate tower, purely as a back-up.

CQ's World Wide DX Contest came up the following weekend, for which 4 Milan hams arrived: Donato, IK2EGL; Ermino, I2EOW; Carlo, IK2CFH; and Filippo, IK2FXZ. Dedicated contesters? Whew! At no time during the 48 hour contest period was one of the three operating positions vacant for more than 15 seconds before someone jumped in and grabbed the mic. Forty eight hours, and some 4,500 QSOs. Whew!

Filippo, IK2FXZ, was nick-named "Quissella" after the contest. This was because after each signal report and number, he'd follow in his valiant but limited English pronunciation with "Quissella?"

As is likely in the heat of any good DX contest, Murphy, (or his Italian cousin) showed up.

An un-expected windstorm arrived, and when the 10-meter SWR went off scale in the early AM, the flashlight revealed a dangling beam. Suspended solely and delicately by its lightly taped rotor cable, to have conveniently lowered the tower would have invited the big beam to come crashing down. The following morning, Ermino ventured up the cold and wet structure, and lashed the beam to the side of tower. The tower was then tilted over, repairs made, and the antenna put quickly back into service, all guns blazing away.

This was impressive. They never seemed to do anything half-way over there, and when turned loose on a life or death contest emergency, they showed a talent and confidence which could have put a man on the moon in a fortnight, let alone a decade.

(End of Part I)

For Trade:

I would like to swap my Santec hand-held for a mobile 2 meter rig. The ST-20T covers 142 to 157.995 MHz + the weather band, and is in great shape.

Joe Forgeng, N4LQW @ 872-8853

QSL Bureau Report

In March, four members submitted 308 QSL's to the Bureau Service.

Please sort your cards carefully and DO NOT include cards for the continental US.

KK4JB

SALE!!

Heath HX-10 CW/SSB/FSK Transmitter, 100W.
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VHF/UHF SIG

The RARS VHF-UHF SIG held its regular monthly meeting on the 9th of March at 7:15 PM. Present were WA4PEN, KB4OKB, WD4EIQ, N4UOE, WA4MJF, KB4EXL, KB4VYP, and K4RKI.

Motion was made and seconded on delaying the elections until next meeting when more of the members could be here. Passed 7 for and 1 against.

The repeater site at the Dean Witter building is on again! The papers are ready to sign. The RARS board has approved everything.

The proposed site for a repeater on Capital Towers is still in the works.

Anticipated completion times for the new repeaters:

220 MHz April <—> July
440 MHz May <—> August
50 Mhz June <—> September

James, KA5IEC has come up with a duplxer for 220. The unit needs some metal work and tuning, however, WD4EIQ thinks he can take care of those details.

We still need the the second site for the six meter repeater and several options were discussed.

The coordination papers will go to SERA shortly.

Refreshements were served and the door prize was won by KB4OKB.

73 de Sherry, KB4EXL

CONGRATULATIONS!!

Congratulations are definately in order for **Jean (N4SSO) & Ben (WA4SKH) Robinson,** the proud parents of a bouncing baby boy, born during those ice-storms last month!!

VE MEETING

RARS VEs who will be working the HAMFEST Exams are requested to attend a brief meeting Wednesday, April 5, 6:45 PM at the YMCA before the Regular Meeting.

RARS FOX FINDERS

A Proposal by KK4MY

Date: Second Saturday of each Month.
Starting MAY 10, 1989

Time: 2:00 PM

Freq: 146.520

Starting Point: To Be Announced.

Boundaries: 15 air mile radius from starting point.

Winner: The first individual (or team) to locate and touch the hidden transmitter.

Fox (or Huntmaster): The winner of the previous hunt.

Refreshments: At a nearby restaurant after the hunt.

General Rules

1. The hidden transmitter's signal must be copyable at the starting point.

2. The hidden transmitter must transmit for at least 15 seconds of every minute. The type of audio modulation must remain the same throughout the hunt, except for identification. Peak deviation shall not be less than 2.0 or more than 4.5 kHz. Any antenna configuration or polarization may be used; however, the configuration and polarization may not be changed during the hunt.

3. The antenna and transmitter shall be within 250 feet of access by standard passenger car. Reasonable care must be taken by the huntmaster to ensure that hunters on foot safely reach the hidden transmitter. The hidden transmitter shall be publicly acces-

sible with no charge for admission.

4. If all cars have not reached the hidden transmitter by 6:00 PM, the hunt shall be ended, unless the huntmaster and remaining hunters agree to continue.

5. The huntmaster shall monitor a frequency other than 146.520, either simplex or repeater, during the hunt. Any hunter wishing to drop out of the hunt shall notify the huntmaster immediately.

6. In case of bad weather, the hunt shall be held, but the huntmaster shall be responsible for taking extra care to ensure the safety of the hunters.

7. In the event of a first place tie, the next huntmaster shall be chosen by lot.

Rule Modifications

The following rule modifications shall be allowed providing they are previously announced by the huntmaster in the RARS EXCITER and on the 146.04/64 repeater evening net at least once during the week prior to the hunt. Only one modification is permitted per hunt.

1. Boundary extension, up to 10 air miles.

2. Off-road distance extension, up to 500 feet.

3. Fixed station bearing contest, concurrent with mobile hunt.

Prohibited Practices

1. Any traffic citation.

2. Use of outside assistance, such as bearings from fixed stations, exsept when a bearing contest is part of the hunt.

3. Interfering with the progress of another hunter in any way.

Additional Huntmaster Responsibilities

1. Obtain permission from property owners as necessary.

2. Cover "No Trespassing" signs where property is used by permission.

3. Select Restaurant.

The proposal is to start Saturday, May 13. The guidelines presented here are a suggested starting point for the rules of the hunt. Nothing is cast in concrete, so if you have suggestions on how the program could be improved, please contact me (eves) at 596-8780, or on the '64 machine.

Brett, KK4MY

Field Day

(continued from page 1)

signs to choose from (including W4DW). Both groups are looking for Novices and Technicians to setup and operate the Novice-Technician stations.

I'd like to broach two ideas to the membership. Would there be any interest in a Certificate of Field Day Participation? Wherever you (a RARS member) are, you would be acknowledged on a Roster. And for groups or individuals (including home QTH operation) within the club that want to submit their Field Day score to the ARRL as a RARS-affiliated effort, that could be coordinated and recognized. We could have unique names that somehow includes "RARS" (separate callsigns, of course). Sleep on it.

73, Steve AB4EL

WANTED!

Access to circuit diagrams and manuals for Heath SB301 and SB401 pair. Steve, AB4EL @ 737-2246

SALE!

Kenwood TL-922A linear amp.
S/N 9070047. First sold Sept '88.
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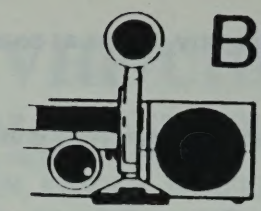

BERT'S BEAT

HOW ABOUT ANOTHER TUNE???

After singing the blues about the sad state of affairs of the USA system of basic education, to the detriment of aspiring hams - and other segments of the population of less importance, I was willing to rest my case. But then I read in an IEEE publication that an eminent EE was complaining about aspiring EEs who did not comprehend all they should about complex numbers. So we are off again! No doubt it is the more intricate nuances of complex numbers that may baffle freshmen at the 4 year colleges, but I am here to inform the multitude that budding technicians have difficulty with what become before complex numbers — such as reciprocals of such math quantities as (X+Y). Many first year collegians say "X-Y". Now with that response, how long does it take a teacher to get across the correct response to a query like "What is the reciprocal of R + jX?" Begin to see the problem??? The moral of this little story is for YOU to get your kids to hit the books, if they're budding engineers, scientists, technicians, or non AB-ers. 'Nuff said ...

GUIDING THE TROOPS TO OUR HAMFEST

Having volunteered to he'p with our Hamfest on 16 April by manning an info booth in the wee hours of Sunday morning, i.e. before Church, I have already mapped plans to have each lost soul led right to the center of things. First I admonish all requesting help to become very familiar with the Mercator projection on the standard 1:25,000 tactical maps so dear to all Army vets. Navy and flyboys can check in with the closest member of the ground-gaining arm and become elucidated. Now when I get a query for guidance to the Hub of Raleigh ham activity, all I need to know are the coordinates of your present position. Knowing that, anyone, even a child or an Extra Class license holder can vector you to the 'Fest. And, when you are given the coordinates of the center of the hamfest to the nearest meter, how can you get lost?? As one can easily deduce, I am really looking forward to the heartwarming task of vectoring all motorists, bicyclists, and those using other means of transport to their hearts' delight — the Durham Hamfest .. er .. the RALEIGH HAMFEST. (I think that's the right one...) But never you mind — just tell me where you want to go and give me the coordinates of where they are. I'll take'em to the nearest HUNDRED METERS! Now, a man can't ask for more than that!!) And that's THIRTY (30, Vince, thirty!!) for tonight!!

(Ed. Note - Okay, Bert — You've got my curiosity. For the past 'couple month's I've been assuming the "30 for tonight" was a some kind of secret code to some fer'in government to come and take New York City (..please!) — so I've been editing it out. But if you're gunna keep using that phrase, I just gotta know. What does "that's 30 for tonight" mean??)

73 de Bert, W4FMN

TERMINAL TECHS?!?

Last month's EXCITER mentioned the possibility of an up-grade SIG — designed to help Novice's & Tech's jump that hurdle into General (or above!!) class. Well, no one — not a single person — contacted Jim DuBreck, N4BYO or Bruce Chase, N4UOD to express their interest.

Can it be that amongst the club's 88 Technician class & 12 Novice class licensees, NO-ONE has aspirations higher than Technicain Class??

Don't get me wrong ... 10 meters and VHF is fine, but YOU'RE MISSING A WHOLE LOT OF HAMMING FUN on the lower bands!!!

Up-grading is NOT that hard —and if enough people are interested, a "formal program" could be made to make it all the easier!!

Contact Jim, N4BYO@ 781-9437; or Bruce, N4UOD @ 781-0582. Let 'em know if you want to upgrade soon, and not fall victim to "Terminal Tech-itus."

"... And if you believed that story about the band fire on page 3, you deserve April Fool's Day more often than just once a year!!"

'NEW LINE

by Bruce Eggers, WA9NEW

PART 97.1(a) CONTINUED

We started with three different ways to do the same thing. Chet is at an emergency shelter, Sam is at the Red Cross Chapter house, and someone at the shelter needs insulin. I hope you agree that my first example, so commonly heard in disaster settings, is NOT the way to get the job done. Let's see what happens if we act like telephone operators (Chet has established contact with Sam through the net control):

"Sam, can you get Joe Smith on the mike? Tell him Bob Jones, the Shelter Manager here, wants to talk to him."

"Roger. Wait."

"Bob, this is Joe Smith. What can I do for you?"

"Joe, I've got a diabetes victim here, June Jones, who's going to need insulin within a few hours. Can you help?"

"I think so Bob. Let me make a couple of calls and I'll get back to you."

"Thanks Joe."

Now that ain't all bad. The Shelter Manager has spoken directly with the Red Cross official he wanted to get the message to and that individual has assumed responsibility for action. Sam and Chet are in the clear. Or are they? Things are hectic. Joe Smith is likely to get quite a few pulls on his reins before the day is over.

Joe leaves the mike, three more life threatening issues consume him for the next hour, then he remembers the guy in the blue hat with the funny letters on it at the radio and he knows he was supposed to do something about insulin for somebody at a shelter. But the guy in the blue hat isn't there anymore and there are six shelters in operation. He thinks it was Bob Jones who had the problem. There's another guy at the radio. He's got a red hat with funny letters on it. Let's see if he can figure it out. You want to guess how long it might take to unravel this one? What if the shelter manager where June is has been relieved? Bob knows that Joe's working the insulin problem so he forgets to mention it to Sue who's relieved him.

I once played a direct role in a scenario like this. It was during Hurricane Inez in Texas back in '67 as I recall. Call me, I'll tell you about it! Clarence Darrow said, "History repeats itself. That's one of the things wrong with history." No Clarence, "History's lessons are no more enlightening than the wisdom of those who interpret them." (David Schoenbrun)

"More to follow."

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Downtown Raleigh

RARS NETS: Nightly 8:00 PM on 146.04/64 - Tuesdays 7:00 PM on 28.364
Technical Information Net: Saturday 8:30 PM on 146.04 / 64

Events Calendar

April	**01**	Cary Foxhunt 2 PM -- 147.15 Repeater & 146.52. See article this issue (page 5).
April	**05**	Hamfest Committee Meeting 4:00PM; NC State Fairgrounds Admin. Office. Near Gate #11
April	**10**	Hamfest Pre-Registration Ends. Contact Rollin, NF4P @ 269-4406 for tickets.
April	**13**	RARS VHF/UHF SIG Meeting -- Contact WA4MJF @ 266-4434
April	**15**	**HAMFEST SOCIAL!!** 7 - 10 PM Contact Anita, KC4AQB @ 846-7455
April	**16**	**Raleigh HAMFEST!!** (w/ Amateur Exams -- Pre-register w/ AA4MY @ 847-8512)
April	**19**	RARS Advisory Board Meeting 7:30 PM; YMCA Hillsborough St, All Members Welcome.
April	**19**	Deadline for May EXCITER material.
April	**26**	EXCITER Fold & Staple -- Contact Vince, AA4MY @ 847-8512
May	**03**	Regular RARS Meeting 7:30 PM; YMCA Hillsborough St.
May	**27**	**HAMFEST -- Durham, NC** For info: Mick, W4ZUS, @ 544-3556 (For info on Amateur Exams: Pete Goolsby, KY4Y, 120 Radcliff Circle, Durham, NC 27713).
Jun	**10**	**HAMFEST -- Winston-Salem, NC**